Sort Classification Tree to Group Similar Classification Types 101

Perform Tree Walking to Classify a Packet of a Flow 102

> Perform Cache Lookup to Determine if Class of the Packet is in a Cacheable Portion of the Tree

> > FIG. 1

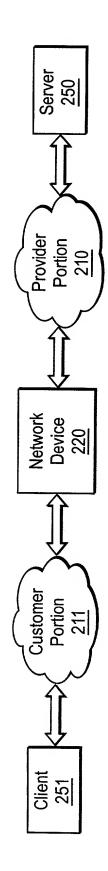


FIG. 2

Classification Shaper Allocator 302 303 Shaper Allocator 301 Shaper Allocator 302 303

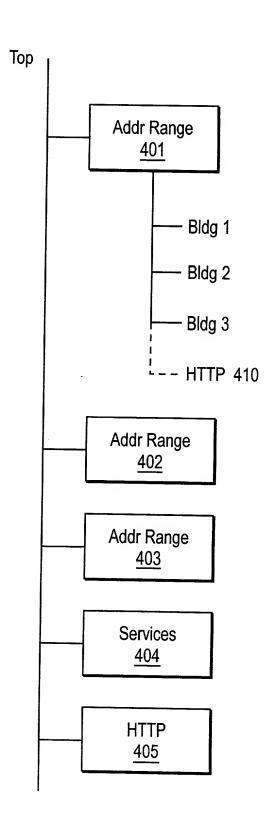


FIG. 4

## Classification Tree Example

TC-0	
TC-1 C1	start of C1 cacheables (address group)
TC-2 C1	
TC-3	end of C1 cacheables
TC-4 C2	start of C2 cacheables (protocol type group)
TC-5 C2	
TC-6 C3	start of C3 cacheables, end of C2 cacheables, F1 hits TC-6
TC-7	end of C3 cacheables (port matching group)
DEFAULT	<b></b>

FIG. 5

Case 1: First packet of Flow1 (F1) is classified as TC6.

		Pass Number through the While Loop					
<u>data</u>	1st	2nd	3rd	4th	5th	6th	7th
tclass	TC-0,1 TC-1,11	TC-2,11	TC-3,11	TC-4,11	TC-5,11	TC-6,11	
inCache	FALSE,2	TRUE,9	FALSE,12		TRUE,9		TRUE,9
cacheProc		C1,6			C2,6		C3,6
cacheEnd		TC-3,6			TC-6,6		TC-7.6
C1 add			F1,12 NF*		•		. ,
C2 add						F1,12 NF*	
C3 add						,	F1,10F*
44.0							

<sup>\*</sup>NF and F represent NOT FOUND and FOUND.

## FIG. 6

Case 2: Second packet of Flow1 (F1) is classified as TC6.

			Pass Number through the While Loop			
data	1st	2nd	3rd	4th		
tclass	TC-0,1 TC-1,11	TC-3,8 TC-4,11	TC-6,8	TC-6,7		
inCache	FALSE,2			·		
cacheProd		C1,6	C2,6	C3,6		
cacheEnd		TC-3,6	TC-6,6	TC-7,6		
C1 lookup		NOTFOUND,6				
C2 lookup			NOTFOUND,6			
C3 lookup				FOUND,6		

FIG. 7

